Surrounding Development

Cumulative analyses were completed for the years 2000 and 2020 respectively. Future traffic volumes include (a) ambient traffic volume growth and (b) volumes which will be generated by other developments. Buildout traffic forecasts for post 2020 conditions were evaluated using volume data from the Bolsa Chica Traffic Impact Analysis, August 16, 1994.

Short-Term Cumulative Traffic

Research of the study area and discussions with the City of Huntington Beach Planning Division determined that other projects' traffic which will influence the study area for short term traffic conditions are the Holly-Seacliff area developments. A breakdown of dwelling units was provided by the City, which at buildout will consist of approximately 2,580 units. To provide a worst case short term analysis, it was assumed these units are completed at the time the proposed project is completed. A percentage of the Holly-Seacliff traffic was assigned to Slater, Graham and Warner to provide additional analysis. This traffic was added to the existing plus project scenario. The short term cumulative traffic volumes are depicted on Exhibit 34

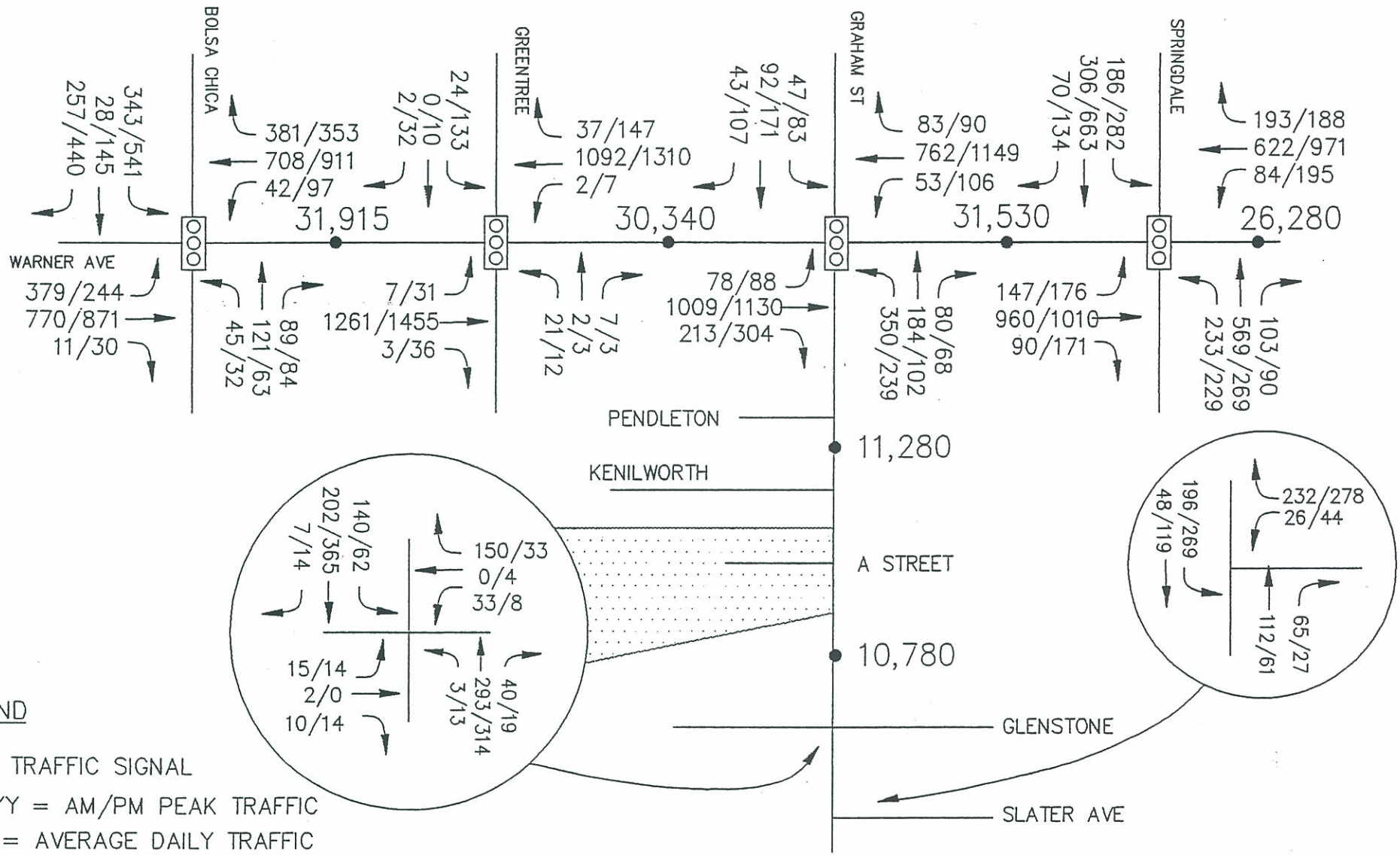
Short-Term Cumulative Levels of Service

With the addition of the Holly-Seacliff area development to existing plus project conditions, analyzed intersections and street segments will continue to operate at acceptable levels of service as summarized in Tables F and G (contained in Existing Conditions). Worksheets for this condition are provided in the Appendix of the traffic study which is included in Appendix B of the EIR. No project-specific impacts have been identified under the short-term Cumulative Condition.

Table I was developed in accordance with City of Huntington Beach Traffic Impact Analyses Guidelines to determine the project's share of total intersection impact under the short-term Cumulative Condition. Table F shows project impacts at all study intersections during the morning and evening peak hours.

2020 Traffic and Levels of Service

As stated previously, the traffic volume data for this forecast year was obtained from the Bolsa Chica Project Traffic Impact Analysis, August 16, 1994. These traffic volumes were approved for use by the City of Huntington Beach. Traffic volumes were projected for the major intersections on Warner Avenue, including Bolsa Chica, Graham Street and Springdale Street. Projections were also made for Graham Street/Slater Avenue with the assumption of a traffic signal. The year 2020 daily and peak hour traffic volumes are presented on Exhibit 35. The improvements identified in the Bolsa Chica report for intersection modifications are represented by the lane geometry depicted on Exhibit 36.



No Scale

EDAW, Inc.

Exhibit 34

Source: Darnell & Associates, Inc.

Short Term Cumulative Traffic Volumes

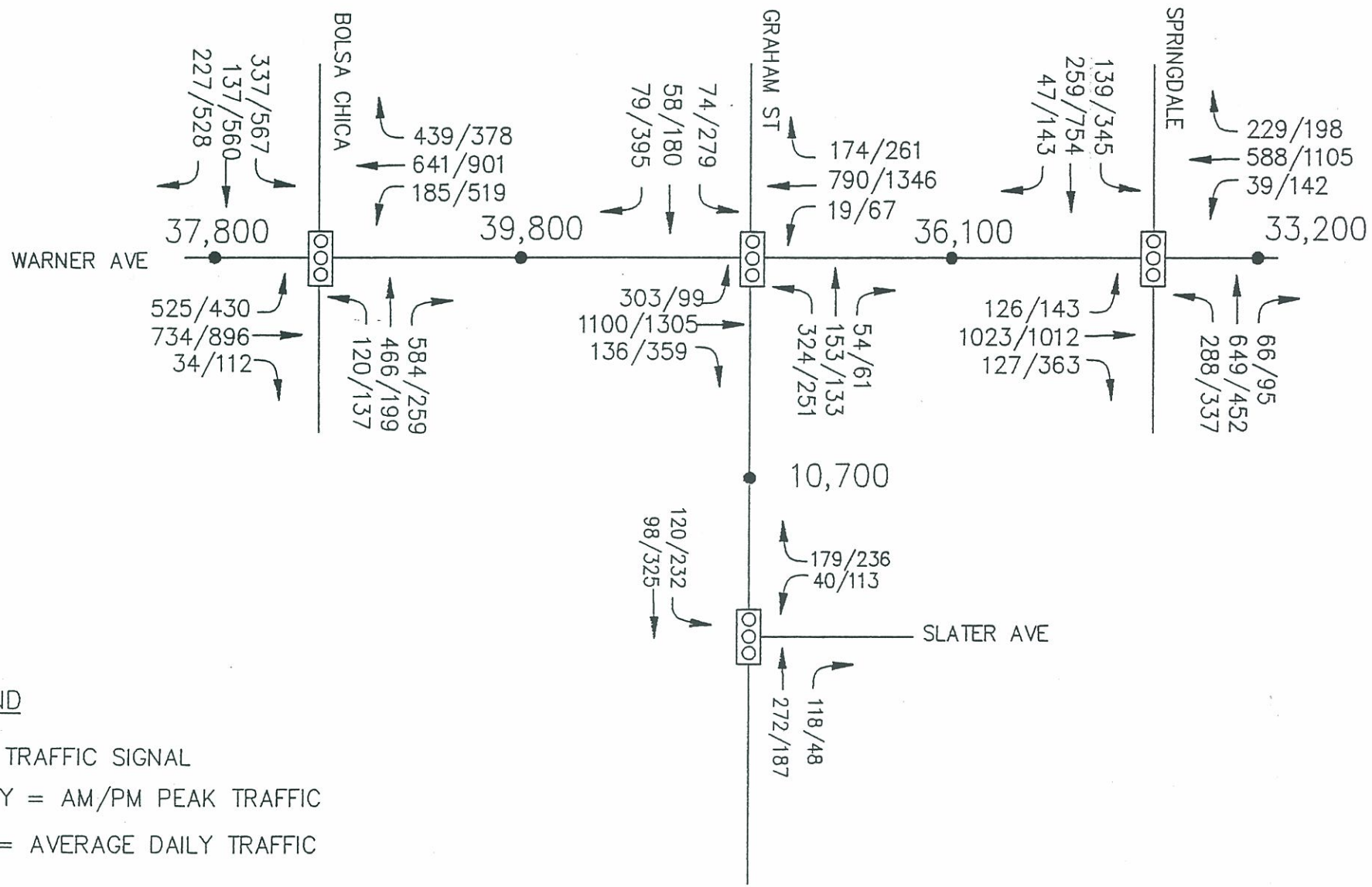
TABLE I

GRAHAM STREET RESIDENTIAL PROJECT PERCENTAGE OF NET TRAFFIC IMPACT ON INTERSECTIONS

Intersections		Traffic	Volumes	AM Peak	Calculation	Net Traffic Impact
EB/WB Street	**NB/SB Street**	**Vp**	**Ve**	**Vc = Vp + Ve + Vsht**	**100*Vp/Vc - Ve**	**1 (%)**
Warner	Bolsa Chica	50	3,020	3,174	100*50/3,174-3,020	1.55
Warner	Greentree	60	2,294	2,458	100*60/2,458-2,294	2.38
Warner	Graham	120	2,770	3,077	100*120/3,077-2,770	3.75
Warner	Springdale	40	3,480	3,563	100*40/3,563-3,480	1.11
Slater	Graham	80	578	679	100*80/679-578	10.54
Glenstone	Graham	80	794	895	100*80/895-794	8.21
Intersections		**Traffic**	**Volumes**	**AM Peak**	**Calculation**	**Net Traffic Impact**
EB/WB Street	**NB/SB Street**	**Vp**	**Ve**	**Vc = Vp + Ve + Vsht**	**100*Vp/Vc - Ve**	**1 (%)**
Warner	Bolsa Chica	63	3,633	3,811	100*63/3,811-3,633	1.63
Warner	Greentree	76	2,974	3,179	100*76/3,179-2,974	2.33
Warner	Graham	154	3,354	3,637	100*154/3,637-3,354	4.06
Warner	Springdale	52	4,223	4,378	100*52/4,378-4,223	1.17
Slater	Graham	100	672	798	100*100/798-672	11.14
Glenstone	Graham	100	734	870	100*100/870-734	10.31

Source: Section 30.1.07.02 - Percentage of Net Traffic Impact, City of Huntington Beach

Vp = Project Traffic Volume
Vc = Cumulative Traffic Volume for the Short Term Study Period = Vp + Ve + Vsht
Ve = Existing Traffic Volume
Vsht = Other Projects Traffic Volume



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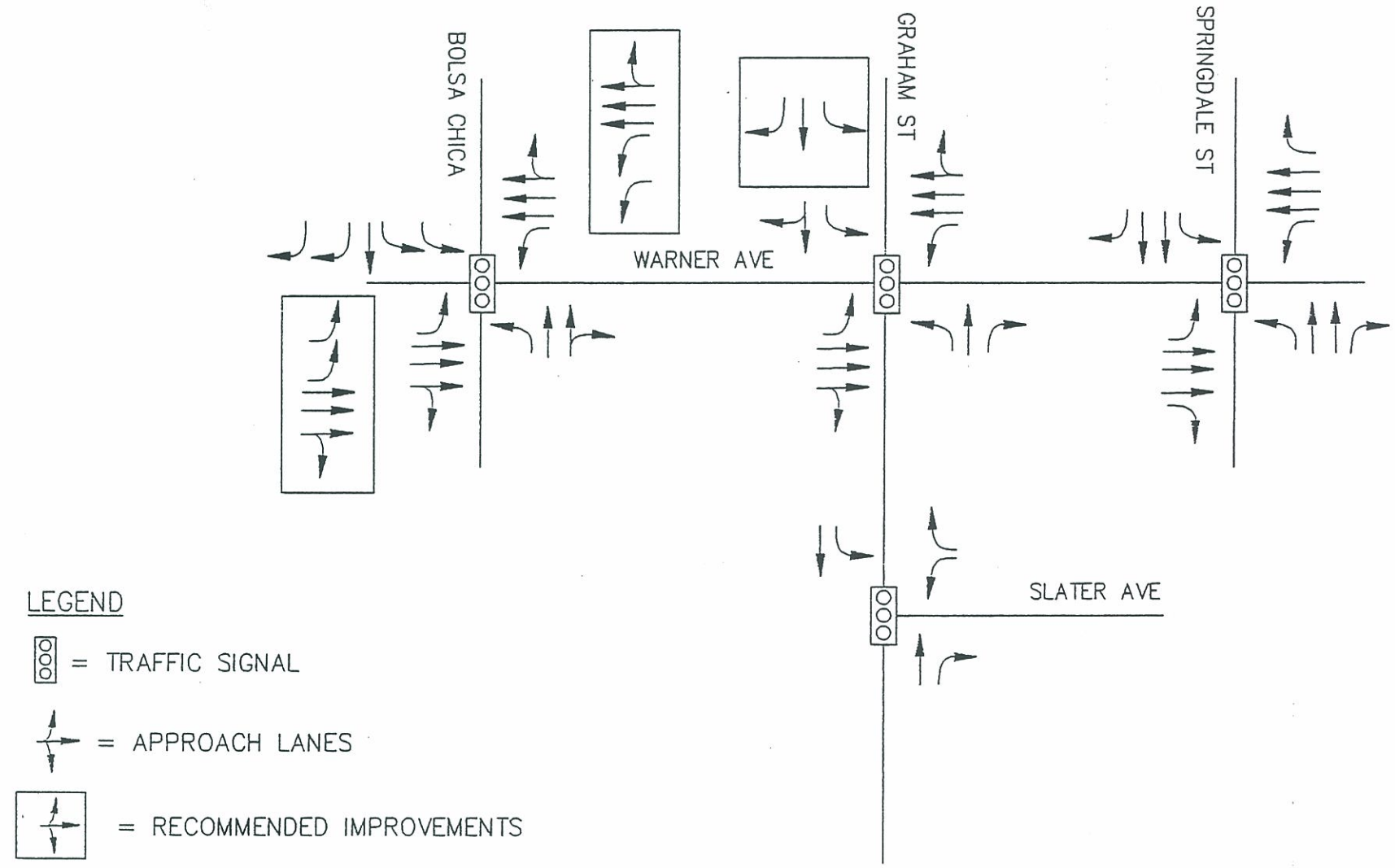
EDAW, Inc.

Exhibit 35

Source: Darnell & Associates, Inc.

Year 2020 Daily and Peak Hour Traffic Volumes



No Scale

EDAW, Inc.

Source: Darnell & Associates, Inc.

Exhibit 36

Year 2020 Intersection Geometrics

The ICU calculation summaries with the assumed lane geometries are presented in Table J. As can seen in Table J, the intersection of Bolsa Chica/Warner Avenue will operate at LOS E for both peak periods. The intersection of Graham Street/Warner will also operate at LOS E under the PM peak hour. This is considered a significant cumulative impact on these two (2) intersections. These impact deficiencies were documented in the Bolsa Chica traffic study, however, no improvements were recommended in the study. The following describes the necessary improvements to the two (2) intersections to bring them within acceptable levels of service:

1. Bolsa Chica/Warner Avenue - Minimum improvements to this intersection to obtain adequate level of service consist of restriping the intersection to provide dual left turns for east/west with two through lanes and exclusive right turns (or three throughs with optional right). This can be accommodated within existing pavement width. Both restriping alternatives will achieve LOS D operation for both peak periods as well as maintain bikelanes.

2. Graham Street/Warner Avenue - Improvements to this intersection to obtain adequate PM peak hour level of service consists of an exclusive southbound right turn lane from Graham to Warner.

TABLE J

SUMMARY OF YEAR 2020 INTERSECTION LEVEL OF SERVICE

Intersection	Year 2020 Conditions			
	AM Peak		PM Peak	
	ICU	LOS	ICU	LOS
Bolsa Chica/Warner	0.98	E	0.97	E
< Mitigated (dual left EB/WB, 2 thru, excl rgt)	0.80	D	0.87	D
< Mitigated (dual left EB/WB, 3 thru, opt rgt)	0.82	D	0.84	D
Graham/Warner	0.69	B	0.92	E
< Mitigated (exclusive SBR)	0.64	B	0.69	B
Springdale/Warner	0.54	A	0.77	C
Graham/Slater	0.30	A	0.37	A

Source: Darnell & Associates, Inc.
LOS = Level of Service defined using ICU methodology

These additional lane geometrics are also presented on Exhibit 36. Mitigation Measure 5 is proposed to ensure the projects contribution to the cumulative impact at these two intersections is reduced to a less than significant level.

A summary of daily traffic impact on roadway segments is presented on Table K, assuming roadways constructed to their ultimate classifications. As can be seen in Table K, all roadways will operate within acceptable levels of service for projected year 2020 traffic volumes. No significant year 2020 cumulative impacts have been identified to roadway segments.

Site Access/Circulation

The impacts associated with on-site circulation and pedestrian/bicycle safety are project-specific issues and are therefore not impacted further by cumulative buildout.

Signal Warrant Analysis/Traffic Signalization

No significant cumulative 2020 buildout impacts have been identified related to traffic signalization.

Parking

The impacts associated with on-site parking are project-specific issues and are therefore not impacted by further cumulative buildout.

TABLE K

SUMMARY OF YEAR 2020 ROADWAY CAPACITY

Segment	Class	LOS D Capacity	2020 ADT	V/C	LOS
Warner Avenue					
< West of Bolsa Chica	6 Major	48,600	37,800	0.70	B
< Bolsa Chica/Graham	6 Major	48,600	39,800	0.74	C
< Graham/Springdale	6 Major	48,600	36,100	0.67	B
< East of Springdale	6 Major	48,600	33,200	0.61	B
Graham Street					
< Warner/Glenstone	Secondary	25,200	10,700	0.38	A

Source: Darnell & Associates, Inc.

LOS = Level of Service
Capacity per City of Huntington Beach TIA Guidelines
ADT = Average Daily Traffic
V/C = Volume to capacity (LOS E) ratio

STANDARD CITY POLICIES AND REQUIREMENTS

A. Prior to issuance of building permits (or certificate of occupancy, if determined appropriate by the Traffic Division and Planning Division) of the first phase of development, a Traffic Impact Analysis (TIA) shall be submitted for review and approval by the Public Works Department, Traffic Engineering Division. The study shall be used to determine the project's Traffic Impact Fee. The traffic impact fees shall be paid prior to issuance of the certificate of occupancy.

B. All applicable Public Works fees shall be paid.

MITIGATION MEASURES

1. Prior to the issuance of ***grading*** ~~building~~ permits, the applicant shall coordinate with the City of Huntington Beach in developing a truck and construction vehicle routing plan (including dirt import haul route). This plan shall specify the hours in which transport activities can occur and methods to minimize construction related impacts to adjacent residences. The final plan shall be approved by the City Engineer.

2. Prior to the issuance of a certificate of occupancy, the applicant shall construct a traffic signal and improve the intersection at the proposed "A" Street and Graham Street.

3. Prior to the issuance of building permits, the applicant shall demonstrate to the satisfaction of the City Traffic Engineer that standards (including ADA) regarding pedestrian/bicycle safety along the perimeter sidewalks ***will*** ~~have~~ be~~en~~ met.

4. Prior to the issuance of certificate of occupancy, the applicant shall be responsible for restriping Graham Street from Glenstone to the project access ("A" Street) as follows:

    - Two 7 foot bikelanes; one 12' through lane in each direction, and a 14' two-way left turning median.

    Additionally, the applicant shall be responsible for restriping Graham Street from "A" street to Warner Avenue, as follows:

    - Two 7 foot bikelanes, one 18' through lane in each direction, and a 14' two-way left turning median.

    The improvements shall be approved by the City Engineer.

5. Prior to the issuance of building permits, the applicant shall participate in the applicable Traffic Impact Fee (TIF) for the City of Huntington Beach. The actual allocation shall be approved by the City. Appropriate credits shall be granted toward the TIF. The TIF shall cover the project's fair share of year 2020 improvements to the arterial street system as follows:

   - Bolsa Chica Street/Warner Avenue - reconfigure intersection for east/west traffic to provide dual left turns and either three throughs or two throughs and an exclusive right turn lane. This deficiency is a product of cumulative growth and not a direct result of the proposed project.

   - Graham Street/Warner Avenue - reconfigure intersection to provide an exclusive southbound right turn lane from Graham Street to Warner Avenue. This deficiency is a product of cumulative growth and not a direct result of the proposed project.

LEVEL OF SIGNIFICANCE

The proposed project will result in short-term construction related impacts due to the addition of truck and construction vehicle traffic. Depending on the location of the haul route, traffic impacts along the selected route may occur. Mitigation Measure 1 will reduce these impacts to a level less than significant.

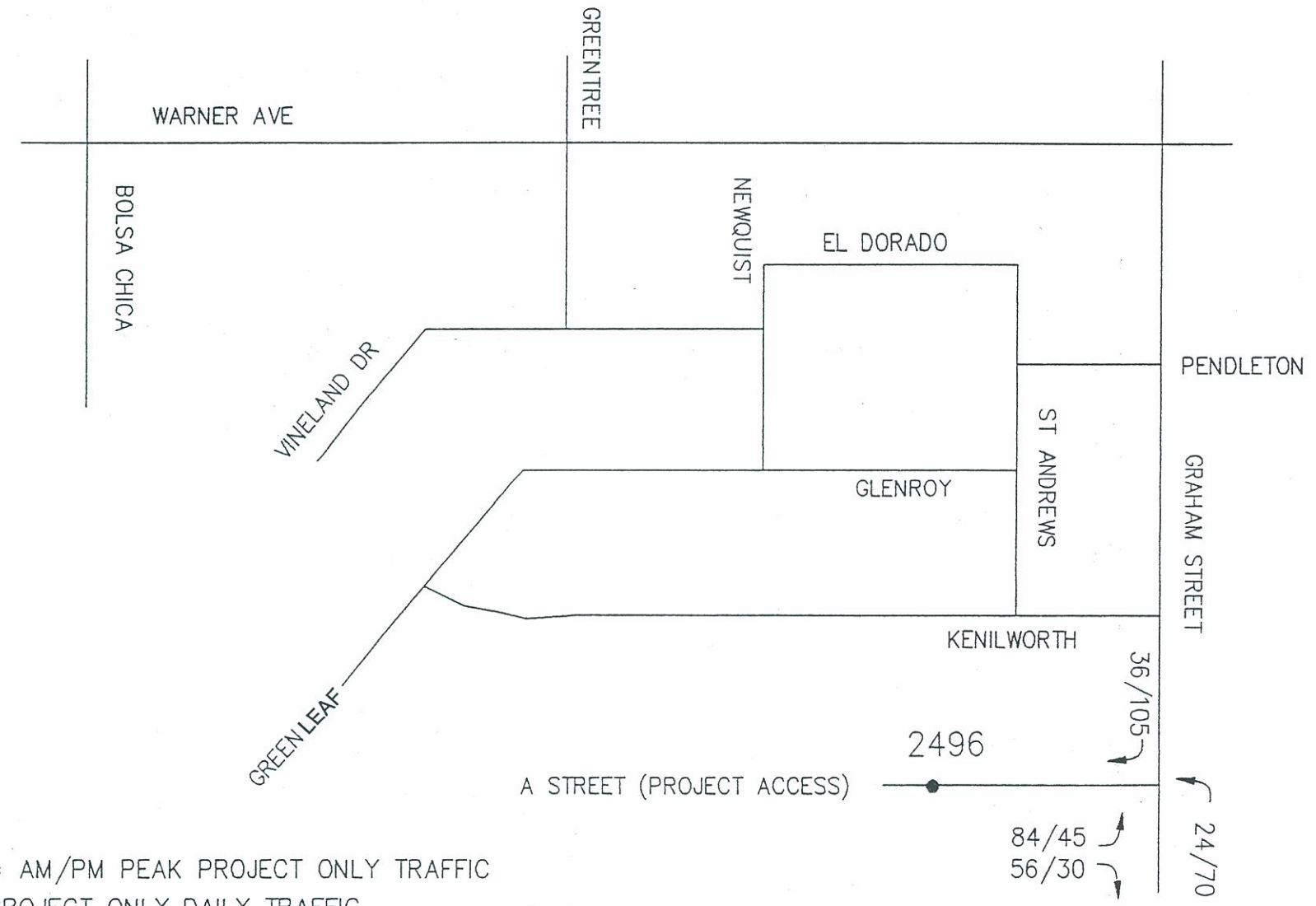
The proposed project will not result in project-specific impacts related to vehicular traffic increases at the modeled intersections and roadway segments under the existing plus project condition.

The proposed project may result in impacts to pedestrian, bicycle, and vehicular safety related to the establishment of access and an on-site circulation system. Mitigation Measures 2 through 4 will reduce this impact to a level less than significant.

The proposed project will not result in significant impacts to parking.

The proposed project will not result in project-specific impacts related to vehicular traffic increases at the modeled intersections and roadway segments under the short-term cumulative condition.

The proposed project in conjunction with other past, present, and reasonably foreseeable future projects will result in level of service deficiencies at the intersections Bolsa Chica Street and Warner Avenue and Graham Street and Warner Avenue under the year 2020 condition. Implementation of Mitigation Measure 5 will reduce the project's incremental impacts to a level less than significant.



No Scale

EDAW, Inc.

Exhibit 37

Source: Darnell & Associates, Inc.

"A" Street Full Access Project Traffic

5.4 AIR QUALITY

This report addresses the potential impacts related to air quality associated with the proposed Shea Homes project. The information contained in this report is consistent with the 1993 South Coast Air Quality Management District CEQA Handbook for Air Quality Analysis. The assumptions and air quality calculations prepared by EDAW, Inc. are provided in Technical Appendix D of this EIR.

EXISTING CONDITIONS

Meteorology/Climate

The climate around the project site, as with all of Southern California, is controlled largely by the strength and position of the subtropical high pressure cell over the Pacific Ocean. The climate is characterized by moderate temperatures and comfortable humidity. The Pacific high pressure zone dominates the local weather patterns and creates a repetitive pattern of frequent early morning cloudiness, hazy afternoon sunshine, daytime onshore breezes, and little temperature change throughout the year. This usually mild climatological pattern is interrupted infrequently by periods of extremely hot weather, winter storms, and Santa Ana winds. Precipitation is limited to a few storms during the wet winter season. Temperatures are normally mild with rare extremes above 100°F or below freezing. The annual mean temperature of 62°F has little seasonal variation.

Winds in the project area are typically driven by the dominant land/sea breeze circulation system. Regional wind patterns are dominated by daytime onshore sea breezes. At night, the wind generally slows and reverses direction traveling offshore to the sea.

In addition, winds control the rate and direction of pollution dispersal. Southern California is notorious for strong temperature inversions that limit the vertical depth through which pollution can be mixed. These inversions are characterized by seasonal differences. In summer, coastal areas are characterized by a sharp discontinuity between the cool marine air at the surface and the warm, sinking air aloft within the high pressure cell over the ocean to the west. This marine/subsidence inversion allows for good local mixing, but acts as a giant lid over the basin. Air starting onshore at the beach is relatively clean, but becomes progressively more polluted as sources continue to add pollution from below without any dilution from above. A second type of inversion forms on cold early winter mornings. These inversions are ground based inversions, sometimes referred to as radiation inversions. Under conditions of a ground based inversion, very little mixing or turbulence occurs and pollutants concentrate near their sources (i.e. roadways).

Most of the air pollutants are confined to the air volume below the base of any inversion, or in a very shallow layer near the ground in the case of a surface inversion.

Air Quality Management

The proposed project is located in the South Coast Air Basin. This area is under the jurisdiction of the South Coast Air Quality Management District (SCAQMD) and the California Air Resources Board (CARB). The SCAQMD sets and enforces regulations for stationary sources in the basin. The CARB is responsible for controlling motor vehicle emissions.

In 1987, Senate Bill 151 became law, giving the SCAQMD significant authority. The law instructs the SCAQMD to develop new transportation control measures and to develop rules for indirect emission sources. Indirect sources are shopping centers, stadiums, and facilities which attract a large number of vehicles. The SCAQMD is also required to develop further programs and regulations that will increase ride sharing and limit heavy-duty truck traffic on freeways during rush hours.

Every three years, SCAQMD prepares an overall plan for air quality improvement. Each iteration of the plan is an update of the previous plan and has a 20-year horizon. The SCAQMD, in coordination with the Southern California Association of Governments (SCAG), adopted the 1994 Air Quality Management Plan (AQMP) for the South Coast Air Basin in September, 1994. At that time, the South Coast Air Basin was designated as a non-attainment area (i.e., does not attain either Federal or State air quality standards) for ozone, carbon monoxide, nitrogen dioxide, and fine particulate matter (PM_{10}) by the Environmental Protection Agency (EPA) and CARB. Table L provides the ambient air quality standards and the relevant harmful effects for each pollutant.

Comparing the 1994 AQMP with the 1991 AQMP, the basic control strategy remains the same in many respects. There are some refinements proposed with this revision. For example, what were called Tier I measures in the 1991 AQMP are now referred to as short- and intermediate-term measures in the 1994 AQMP. Additionally, what were called Tier II and Tier III measures in the 1991 AQMP have been consolidated, and are now referred to as long-term measures.

Short- and intermediate-term emission reduction measures are those that can be adopted using currently available technological applications, statutory authority, and management practices. Such measures have been defined for stationary, mobile, and area source categories.

Long-term emission reduction measures include already-demonstrated but commercially unavailable control technologies and "on-the-horizon" technologies requiring advancements that can reasonably be expected to occur in the near future. This category also includes measures that require commitments for research, development, and widespread commercial application of technologies that may not exist yet, but may be reasonably expected given the rapid technological advances gained over the past 20 years. The federal Clean Air Act recognized the need to develop new technology control measures. It specifically provided "extreme" ozone non-attainment areas and the necessary time to develop the new control measures [Section 182(e)(5)]. Many of the long-term emission reduction measures which rely on technologies that are not currently developed are considered as meeting Section 182(e)(5) requirements.

TABLE L

AMBIENT AIR QUALITY STANDARDS

Pollutant	STATE STANDARD Concentration, Averaging Time	FEDERAL STANDARD Concentration, Averaging Time	MOST RELEVANT EFFECTS
Ozone	>0.09 ppm,1-hr. avg.	>0.12 ppm,1-hr avg.	(a) Short-term exposures: (1) Pulmonary function decrements and localized lung edema in humans and animals. (2) Risk to public health implied by alterations in pulmonary morphology and host defense in animals; (b) Long-term exposures: Risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (c) Vegetation damage; (d) Property damage
Carbon Monoxide	>9.0 ppm,8-hr avg. >20 ppm,1-hr avg.	>9 ppm,8-hr avg. >35 ppm,1-hr avg.	(a) Aggravation of angina pectoris and other aspects of coronary heart disease; (b) Decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (c) Impairment of central nervous system functions; (d) Possible increased risk to fetuses
Nitrogen Dioxide	>0.25 ppm,1-hr avg.	>0.053 ppm, ann. avg.	(a) Potential to aggravate chronic respiratory disease and respiratory symptoms in sensitive groups; (b) Risk to public health implied by pulmonary and extra-pulmonary biochemical and cellular changes and pulmonary structural changes; (c) Contribution to atmospheric discoloration
Sulfur Dioxide	>0.04 ppm,24-hr avg. >0.25 ppm,1-hr. avg.	>0.03 ppm, ann. avg. >0.14 ppm,24-hr avg.	(a) Bronchoconstriction accompanied by symptoms which may include wheezing, shortness of breath and chest tightness, during exercise or physical activity in persons with asthma
Suspended Particulate Matter (PM_{10})	>30 µg/m3,ann. Geometric mean >50 µg/m3,24-hr avg.	>50 g/m3,ann. Arithmetic mean >150 g/m3,24-hr avg.	(a) Excess deaths from short-term exposures and exacerbation of symptoms in sensitive patients with respiratory disease; (b) Excess seasonal declines in pulmonary function, especially in children
Sulfates	≥25 µg/m3,24-hr avg.		(a) Decrease in ventilatory function; (b) Aggravation of asthmatic symptoms; (c) Aggravation of cardio-pulmonary disease; (d) Vegetation damage; (e) Degradation of visibility; (f) Property damage
Lead	≥1.5 µg/m3,30-day avg.	>1.5 g/m3,calendar quarter	(a) Increased body burden; (b) Impairment of blood formation and nerve conduction
Visibility-Reducing Particles	In sufficient amount to reduce the visual range to less than 10 miles at relative humidity less than 70%, 8-hour average (10am - 6pm)		(a) Increased body burden; (b) Impairment of blood formation and nerve conduction

Source: SCAQMD, 1996

ppm parts by volume per million parts of air
µg/m^3 micrograms per cubic meter of air
mg/m^3 milligrams per cubic meter of air
avg. average
ann. annual

The 1997 Air Quality Management Plan (AQMP) is based on the 1994 AQMP, and carries forward most of the innovative strategies crafted in that AQMP. The current AQMP places a greater focus on particulate matter (PM_{10}), since this is the first plan required by federal law to demonstrate attainment of the federal PM_{10} ambient air quality standards. The Plan also updates the demonstration of attainment for ozone and carbon monoxide, and includes a maintenance plan for nitrogen dioxide (NO_2), as the South Coast Air Basin now qualifies for attainment of that federal standard.

The 1997 AQMP proposes policies and measures to achieve federal and state standards for healthful air quality in the Basin and those portions of the Mojave Desert and Salton Sea Air Basins (formerly named the Southeast Desert Air Basin) that are under South Coast Air Quality Management District (District) jurisdiction (namely, Antelope Valley and Coachella Valley). The target attainment dates for Federal and State standards are depicted in Table M. The AQMP was approved by the South Coast Air Quality Management District Board of Directors on November 15, 1996.

Federal Requirements

In November, 1990, Congress enacted a series of amendments to the Clean Air Act intended to intensify air pollution control efforts across the nation. One of the primary goals of the 1990 amendments to the Clean Air Act (CAA) was an overhaul of the planning provisions for those areas not currently meeting National Ambient Air Quality Standards (NAAQS). The CAA identifies specific emission reduction goals, requires both a demonstration of reasonable further progress and attainment, and incorporates more stringent sanctions for failure to attain or to meet interim milestones.

In addition, the CAA requires the District to develop: a Federal Attainment Plan for Ozone (Ozone Plan) as given in Section 182 (c)(2)(A); a post-1996 Rate-of-Progress Plan as required in Section 182(c)(2)(B); Ozone Attainment Demonstrations for the Los Angeles county portion of the SEDAB (Antelope Valley) and the Riverside Non-attainment area of the SEDAB (Coachella - San Jacinto Planning Area); and a PM_{10} State Implementation Plan (SIP) which incorporates best available control measures (BACM) for fugitive sources (referred to as the PM_{10} BACM SIP), as required by Section 189(b)(1)(B).

State Requirements

The California Clean Air Act (CCAA) was signed into law on September 30, 1988. Through its many requirements, the CCAA serves as the centerpiece of the Basin's attainment planning efforts since it is generally more stringent than the 1990 federal Clean Air Act Amendments.

TABLE M

DRAFT 1997 AQMP TARGET ATTAINMENT DATES

Pollutant	Federal	State
Nitrogen Dioxide	met	met
Carbon Monoxide	2000	2000
PM_{10}	2006	2010+
Ozone	2010	2010+

Source: SCAQMD, 1996

Key CCAA requirements that the District addresses in the 1997 AQMP are to: apply Best Available Retrofit Control Technology; reduce non-attainment pollutants and their precursors at a rate of five percent per year, or, if this cannot be done, include all feasible measures and an expeditious implementation schedule; achieve an average vehicle ridership during peak commute hours of 1.5 persons per vehicle by 1999; ensure no net increase in mobile source emissions after 1997; reduce population exposure to severe non-attainment pollutants (i.e., ozone, carbon monoxide, and nitrogen dioxide for the Basin) according to a prescribed schedule; and rank control measures by cost-effectiveness and implementation priority. Additionally, state law requires market-based programs proposed as part of the AQMP to meet specific design requirements. Finally, state law requires the plan to provide for attainment of the federal and state ambient air quality standards (Health & Safety Code Section 40462).

Existing Air Quality

The air quality of the South Coast Air Basin is determined both by the primary pollutants added daily to the air mass and by the secondary pollutants. Secondary pollutants, specifically ozone, represent the major air quality problems basinwide. The air quality of the project site is determined by primary pollutants emitted locally, the existing regional ambient air quality, and the specific meteorological factors which influence the site.

Southern California has frequent temperature inversions which inhibit the dispersion of pollutants. Inversions may be either ground-based or elevated. Ground-based inversions, sometimes referred to as radiation inversions, are most severe during clear, cold early winter mornings. Under conditions of a ground-based inversion, very little mixing or turbulence occurs. High concentrations of primary pollutants may occur locally to major roadways. Elevated inversions can be generated by a variety of meteorological phenomena. Elevated inversion dispersion is not restricted. Mixed inversions are lower in the summer and more persistent. This low summer inversion acts as a lid over the South Coast Air Basin. It is responsible for the high levels of ozone observed during summer months in the air basin.

There has been a significant improvement in air quality in the South Coast Air Basin over previous years' air pollution levels. Between 1976 and 1993, the number of days the federal standard was exceeded decreased by 47 percent. The calendar year 1993, for example, represents one of the cleanest years on record for the Basin. In that year, the federal standards were exceeded at one or more locations in the Basin on 147 days; however, this was still more frequently than any other area of the nation.

Basinwide, of the federal and state standards which were exceeded in 1993, the ozone standard was exceeded most frequently, followed by carbon monoxide, and PM_{10}. Sulfur dioxide, nitrogen dioxide, sulfate, and lead concentrations were below both the state and federal standards.

Despite its improved air quality over the past years, the South Coast Air Basin has the worst ozone air quality in the nation, and is the only area designated as "extreme" non-attainment for ozone. The Basin is the only area in non-attainment of the federal nitrogen dioxide air quality standard. In 1992, the Basin recorded the greatest number of exceedances of the federal carbon monoxide standard in the nation. PM_{10} levels are also very high compared to most other areas.

The nearest monitoring station is the Los Alamitos station which is located approximately 3 miles north of the project site. This station monitors ozone and sulfur dioxide. Data for carbon monoxide and nitrogen dioxide was obtained from the Costa Mesa station located approximately 7 miles east of the project site. Table N summarizes the last five years of monitoring data and depicts the number of days on which pollution levels exceeded state standards.

Table N identifies the number of days exceeding state air quality in the Orange County area and indicates that ozone is the air pollutant of primary concern in the project area. Ozone is a secondary pollutant and is not directly emitted. Ozone is the result of the chemical reactions of other pollutants, most importantly hydrocarbons and nitrogen dioxide, in the presence of bright sunlight. Pollutants emitted from upwind cities react during transport downwind to produce the oxidant concentrations experienced in the project vicinity.

All areas of the South Coast Air Basin contribute to the ozone levels experienced at both the Costa Mesa and the Los Alamitos monitoring stations with the more significant areas being those directly upwind. The ozone levels at the Los Alamitos station have significantly decreased over the past few years.

Carbon monoxide standards have not been exceeded over the past several years at the Costa Mesa station. This station is located adjacent to Harbor Boulevard, and it is very likely that the carbon monoxide concentrations recorded at this station are influenced by the motor vehicle activity on this roadway. Carbon monoxide is generally considered to be a local pollutant. Carbon monoxide is directly emitted from several sources (most notably motor vehicles), and the highest concentrations experienced are directly adjacent to the source.

TABLE N

NUMBER OF DAYS EXCEEDING STATE AIR QUALITY STANDARDS
ORANGE COUNTY AIR QUALITY MONITORING SUMMARY
1992-1995

Pollutant/Standard	1992	1993	1994	1995
Ozone				
1-HR > 0.09 ppm	21	22	3	3
Carbon Monoxide				
1-HR > 20 ppm	0	0	0	0
8-HR > 9 ppm	1	0	0	0
Nitrogen Dioxide				
1-HR > 0.25 ppm	0	0	0	0
Sulfur Dioxide				
24-HR > 0.05 ppm	0	0	0	0
Suspended Particulate Matter (PM_{10})				
24 Hr 50 $\mu g/m^3$	4*	0	11**	14**

Source: California Environmental Protection Agency (Air Resources Board) Air Quality Data, 1991 through 1995

ppm parts per million parts of air, by volume
ug/m^3 micrograms per cubic meter
-- pollutant not monitored
* Newport Beach station
** Anaheim station

Particulate concentrations monitored at other stations in Orange County should be representative of the level currently experienced at the project site. Particulates are particles of dust, smoke, and minute droplets of liquids called aerosols. These are the particles which have the potential to do the greatest harm to human health because they can pass through the body's natural filtering system and become lodged in the lungs. Inhaled particulates reduce lung capacity and may carry materials into the body.

Project Site

Presently, the approximately 49.5-acre project site is currently vacant. The site currently generates no traffic and is assumed to generate negligible mobile and stationary source air emissions.

IMPACTS

Appendix G of CEQA Guidelines serves as a guideline/general example of impacts that are normally considered to have a significant effect on the environment. A project would typically have a significant air quality impact if it will:

(x) violate any ambient air quality standard, contribute substantially to an existing or projected air quality violation, or expose sensitive receptors to substantial pollutant concentration.

For the purposes of this EIR, actions that violate federal standards for criteria pollutants (i.e. primary standards designed to safeguard the health of people considered to be sensitive receptors while outdoors) and secondary standards (designed to safeguard human welfare) are considered significant impacts. Additionally, actions that violate State standards developed by CARB or SCAQMD, including thresholds for criteria pollutants are considered significant impacts.

Threshold criteria for determining environmental significance has been established by the 1993 South Coast Air Quality Management District CEQA Handbook for Air Quality Analysis. These are:

Short-Term/Construction Emissions

- 2.5 tons per quarter of reactive organic compounds (ROC)
- 2.5 tons per quarter of nitrogen oxides (NO_x)
- 24.75 tons per quarter of carbon monoxide (CO)
- 6.75 tons per quarter of PM_{10}

Long-Term/Operational Emissions

- 55 pounds per day of reactive organic compounds (ROC)
- 55 pounds per day of nitrogen oxides (NO_x)
- 550 pounds per day for carbon monoxide (CO)
- 150 pounds per day of PM_{10}

Impacts to air quality can be separated into short-term and long-term impacts. Short-term impacts usually are related to construction activities. During construction, the preparation of foundations and footings, demolition of existing structures, and building assembly will create temporary emissions of dusts, fumes, equipment exhaust, and other air contaminants throughout the project construction period.

Long-term air quality impacts would result from two types of emissions sources, stationary and mobile. Stationary sources include the emissions produced from on-site energy use for heating, cooling, operation of electrical machinery, lighting, appliances, and other equipment that consumes electricity or natural gas. Mobile sources are emissions generated by vehicles.

Secondary project-related impacts derive from a number of other small, growth-connected emissions sources. Such sources include, but are not limited to: evaporative emissions at gas stations or from paints, thinners, or solvents used in construction and maintenance or light industrial uses, increased air travel from business travelers, dust from tire wear and re-suspended roadway dust, etc. All these emissions points are either temporary, or they are so small in comparison to project-related automotive sources that their impact would not be significant.

Emissions increases from additional development within the airshed, even if they do not of themselves cause standards to be violated, should be considered cumulatively significant because they impede future regional attainment of clean air standards.

The impacts related to the above criteria are discussed below.

Short-Term Impacts

The proposed project will have a short-term impact on air quality from construction activities. The grading of the project site, the construction of the buildings, and construction worker trips will create temporary emissions of dust, fumes, equipment exhaust, and other air contaminants throughout the project construction period. Pollutant emissions can vary substantially from day to day, depending on the level of activity, the specific operations, and the prevailing weather.

In order to evaluate the project emissions, emission factors contained in the 1993 South Coast Air Quality Management District CEQA Handbook for Air Quality Analysis were utilized. In addition, assumptions for construction activities were obtained from the project applicant. The assumptions for construction activities and short-term air quality calculations are provided in Appendix D of this EIR. The following outlines the anticipated impacts related to construction for the proposed project.

Based on the emission factors and assumptions for construction activities, it is anticipated that the proposed project will exceed SCAQMD's daily threshold emission levels for NO_x. Table O provides a comparison of daily construction emissions to the SCAQMD's emission thresholds of significance for each pollutant and identifies the percent by which the emission threshold is exceeded. The daily exceedance of the threshold for NO_x is a short-term air quality impact. Further, the addition of emissions to an air basin designated as non-attainment is considered under CEQA to be an impact. Implementation of Mitigation Measures 1 through 6 are proposed to reduce this impact. SCAQMD identifies that the proposed measures are capable of reducing NO_x emissions by

up to 97 percent (Tables 11-2, 11-3, 11-4 in the SCAQMD CEQA Air Quality Handbook, 1993). With implementation of mitigation, this impact is reduced to a level less than significant.

Long-Term Impacts

The development of the proposed project will result in long–term air quality impacts. Long–term air quality emissions associated with the proposed project would result from two types of sources: stationary and mobile. Stationary sources include the emissions produced from on–site energy use for heating, cooling, operation of electrical machinery, lighting, appliances, and other equipment that consumes electricity or natural gas. Mobile sources are emissions generated by increased vehicular trips which will result from project implementation. The pollutants generated in the largest quantities would be CO, NO_x, and PM_{10}. Hydrocarbons (HC) would be emitted in smaller quantities. Long-term impacts associated with the proposed project's implementation are discussed under the heading Total Emissions later in this section.

Stationary Source Emissions

Stationary sources can be divided into two major subcategories: point and area sources. Point sources are generally large emitters with one or more emission sources at a facility with an identified location (e.g., power plants, refinery boilers). Area sources generally consist of many small emission sources (e.g., residential water heaters, architectural coatings) which are distributed across the region.

Stationary emissions will be generated on-site by the combustion of natural gas for space heating and water heating. Off-site emissions will be generated due to electrical usage. The generation of electrical energy by the combustion of fossil fuels results in additional off–site emissions. In order to evaluate the project emissions, emission factors contained in the 1993 South Coast Air Quality Management District CEQA Handbook for Air Quality Analysis were utilized.

Projections of the proposed project's generated stationary source emissions are presented in column 1 of Table P. The calculations for the projections are contained in Appendix D of this EIR.

Mobile Source Emissions

Mobile source emissions will be generated by vehicle trips as a result of the proposed project. Mobile source or indirect emissions projected to result from implementation of the proposed project are vehicular pollutants released by increases in vehicular traffic. Several pollutants are directly emitted from motor vehicles. These include CO, NO_x, PM_{10}, and HC. CO is the primary pollutant of major concern along roadways since air quality standards for CO along roadways are exceeded more frequently than the other pollutant standards.

For the purpose of quantifying mobile source air quality impacts, the emission factors contained in the 1993 South Coast Air Quality Management District CEQA Handbook for Air Quality Analysis were utilized. The projections of the proposed project's generated mobile source emissions are presented in column 2 of Table P. The calculations for the projections are contained in Appendix D of this EIR.

Total Emissions

Long-term total emissions generated from the project are the sum of the stationary source emissions and the mobile source emissions. The total emissions amount is then compared to the impact criteria for long-term emissions established by the SCAQMD for daily threshold emission levels.

It should be noted that the air quality analysis of mobile source emissions is based on standards set forth in the South Coast Air Quality Management District CEQA Handbook for Air Quality Analysis, with environmental significance determined accordingly. This worst-case analysis criteria assumes that the proposed project will generate increased traffic; and therefore, increased vehicle emissions. While it is obvious that the increased emissions will be generated in the vicinity of the project site, the increase will not necessarily constitute a net increase in emissions generated within the South Coast Air Basin. The totals for both vehicular and stationary source emissions generated by the proposed project are displayed in column 3 of Table P.

TABLE O

CONSTRUCTION EMISSIONS

Pollutant	SCAQMD Threshold	Construction Emissions	Exceeds Threshold?	Percent Exceeded
Carbon Monoxide	550 (lbs/day)	34 (lbs/day)	No	--
Reactive Organic Compounds	75 (lbs/day)	11 (lbs/day)	No	--
Nitrogen Oxides	100 (lbs/day)	158 (lbs/day)	Yes	58%
PM_{10}	150 (lbs/day)	11 (lbs/day)	No	--

Source: EDAW, Inc., 1997

TABLE P

PROJECT 1997 ESTIMATED EMISSIONS
(POUNDS/DAY)

Emission	Stationary Sources	Mobile Sources	Total Emissions	SCAQMD Threshold	Exceeds Threshold?	Percent Exceeded
Carbon Monoxide	0.7	690.6	691.3	550	yes	26%
Nitrogen Oxides	4.0	47.8	51.8	55	no	--
Particulates (PM_{10})	0.1	4.2	4.3	150	no	--
Reactive Organic Compounds	0.0	56.2	56.2	55	yes	2%

Source: EDAW, Inc., 1997

Based on the long-term emissions estimated to be generated by the proposed project, it is anticipated that the proposed project will exceed SCAQMD's daily threshold emission levels for CO and ROC. Table P provides a comparison of daily total emissions to the SCAQMD's emission thresholds of significance for each pollutant, and identifies the percent by which the emission thresholds are exceeded. The daily exceedance of the thresholds for CO and ROC is a long-term air quality impact. In addition, the addition of emissions to an air basin designated as non-attainment is considered under CEQA to be an significant impact. Implementation of Mitigation Measures 7 and 8 is proposed to reduce this impact. SCAQMD identifies that the proposed measures are capable of reducing CO emissions by up to 31 percent and ROC emissions by up to 6 percent (Tables 11-6, 11-7 in the SCAQMD CEQA Air Quality Handbook, 1993). With implementation of mitigation, this impact is reduced to a level less than significant.

CUMULATIVE IMPACTS

The proposed project, in conjunction with other past, present, and reasonably foreseeable future projects, will result in a short-term air quality impact due to construction activities. The addition of emissions to an air basin designated as non-attainment is considered under CEQA to be an impact. The project's incremental contribution to this impact will be reduced by Mitigation Measures 1 through 6. The project's incremental impact, after mitigation, is reduced to a level less than significant.

The proposed project in conjunction with other past, present, and reasonably foreseeable future projects will result in significant cumulative long-term impacts to air quality. The addition of emissions to an air basin designated as non-attainment is considered under CEQA to be an impact. Mitigation Measures 7 and 8 will reduce this impact by reducing the proposed project's mobile and

stationary source emissions. The project's incremental impact, after mitigation, is reduced to a level less than significant.

STANDARD CITY POLICIES AND REQUIREMENTS

A. During construction, the applicant shall use water trucks or sprinkler systems on all areas where vehicles travel to keep damp enough to prevent dust from being raised when leaving the site.

B. During construction, the applicant shall use low sulfur fuel (.05% by weight) for construction equipment.

C. During construction, the applicant shall attempt to phase and schedule construction activities to avoid high ozone days (first stage smog alerts).

D. During construction, the applicant shall discontinue construction during second stage smog alerts.

MITIGATION MEASURES

1. During grading and construction, the applicant shall be responsible for compliance with the following:

    A. During clearing, grading, earth moving, or excavation, maintain equipment engines in proper tune.

    B. After clearing, grading, earth moving, or excavation:
        1) Wet the area down, sufficient enough to form a crust on the surface with repeated soakings, as necessary, to maintain the crust and prevent dust pick up by the wind.
        2) Spread soil binders; and
        3) Implement street sweeping as necessary.

    C. During construction:
        1) Use water trucks or sprinkler systems to keep all areas where vehicles move damp enough to prevent dust raised when leaving the site;
        2) Wet down areas in the late morning and after work is completed for the day;
        3) Use low sulfur fuel (.05% by weight) for construction equipment.

D. Phase and schedule construction activities to avoid high ozone days.

E. Discontinue construction during second stage smog alerts.

2. During grading and construction, the applicant shall be responsible for compliance with the following ***(or other reasonably equivalent measures as required by the City Engineer):***

A. Require a phased schedule for construction activities to minimize daily emissions.

B. Schedule activities to minimize the amount of exposed excavated soil during and after the end of work periods.

C. Treat unattended construction areas with water (disturbed lands which have been, or are expected to be unused for four or more consecutive days).

D. Require the planting of vegetative ground cover as soon as possible on construction sites.

E. Install vehicle wheel-washers before the roadway entrance at construction sites.

F. Wash off trucks leaving site.

G. Require all trucks hauling dirt, sand, soil, or other loose substances and building materials to be covered, or to maintain a minimum freeboard of two feet between the top of the load and the top of the truck bed sides.

H. Use vegetative stabilization, whenever possible, to control soil erosion from storm water especially on super pads.

I. Require enclosures or chemical stabilization of open storage piles of sand, dirt, or other aggregate materials.

J. Control off-road vehicle travel by posting driving speed limits on these roads, consistent with City standards.

K. Use electricity from power poles rather than temporary diesel or gasoline power generators ***when practical***.

3. During grading and construction, the applicant shall be responsible for assuring that vehicle movement on any unpaved surface other than water trucks shall be terminated if wind speeds exceed 15 mph.

4. During grading and construction, the applicant shall be responsible for the paving of all access aprons to the project site and the maintenance of the paving.

5. Prior to issuance of grading permits, the applicant shall be responsible for assuring that construction vehicles be equipped with proper emission control equipment to substantially reduce emissions.

6. Prior to issuance of grading permits, the applicant shall be responsible for the incorporation of measures to reduce construction related traffic congestion into the project grading permit. Measures, subject to the approval and verification by the Public Works Department, shall include, as appropriate:

   - Provision of rideshare incentives.
   - Provision of transit incentives for construction personnel.
   - Configuration of construction parking to minimize traffic interference.
   - Measures to minimize obstruction of through traffic lanes.
   - Use of a flagman to guide traffic when deemed necessary.

7. Prior to the issuance of use and occupancy permits, the applicant shall provide proof to the City's Traffic Engineer that the project has contributed its 'fair-share' towards regional traffic improvement systems (i.e., traffic impact fees) for the area. This shall include efforts to synchronize traffic lights on streets impacted by project development.

8. Prior to the issuance of use and occupancy permits, the applicant shall provide proof that energy saving features have been installed in project homes as required by the Uniform Building Code. Features may include: solar or low-emission water heaters, energy efficient appliances, double-glass paned windows, low-sodium parking lights, etc.

LEVEL OF SIGNIFICANCE

The proposed project is anticipated to exceed SCAQMD's daily threshold emission levels for NO_x during construction activities. Further, the addition of emissions to an air basin designated as non-attainment is considered under CEQA to be a significant impact. Mitigation Measures 1 through 6 are proposed to reduce this impact. This impact, after mitigation, is reduced to a level less than significant.

The proposed project is anticipated to exceed SCAQMD's daily threshold emission levels for CO and ROC. The daily exceedance of the thresholds for CO and ROC is a long-term air quality impact. Further, the addition of emissions to an air basin designated as non-attainment is considered

under CEQA to be a significant impact. Mitigation Measures 7 and 8 are proposed to reduce this impact. This impact, after mitigation, is reduced to a level less than significant.

The proposed project, in conjunction with other past, present, and reasonably foreseeable future projects, will result in a short-term air quality impact due to construction activities. The addition of emissions to an air basin designated as non-attainment is considered under CEQA to be a significant impact. The project's incremental contribution to this impact will be reduced by Mitigation Measures 1 through 6. The project's incremental impact, after mitigation, is reduced to a level less than significant.

The proposed project, in conjunction with other past, present, and reasonably foreseeable future projects, will result in significant cumulative long-term impacts to air quality. The addition of emissions to an air basin designated as non-attainment is considered under CEQA to be a significant impact. Mitigation Measures 7 and 8 will reduce the proposed project's incremental contribution to this impact by reducing the proposed project's mobile and stationary source emissions. The project's incremental impact, after mitigation, is reduced to a level less than significant.

5.5 NOISE

This report addresses the potential impacts related to noise associated with the proposed Shea Homes project. The noise calculations prepared by EDAW, Inc., February 1997 and March 1998 are provided in Appendix C. The traffic assumptions used in the noise analysis are from the traffic study prepared by Darnell & Associates, June 1997.

EXISTING CONDITIONS

Noise Measurement

Sound is technically described in terms of the loudness (amplitude) of the sound and frequency (pitch) of the sound. The standard unit of measurement of the loudness of sound is the Decibel (dB). One decibel is approximately equal to the threshold of a person's hearing, 30 decibels is considered very quiet, 45 decibels is commonly considered the maximum indoor noise level, and 65 decibels is commonly considered the maximum outdoor noise levels. At 100 decibels noise begins to be intolerable and at 180 decibels noise is lethal.

Because the human ear is not equally sensitive to sound at all frequencies, a special frequency-dependent rating scale has been devised to relate noise to human sensitivity. The A-weighted decibel scale (dBA) performs this compensation by discrimination against frequencies in a manner approximating the sensitivity of the human ear.

Community noise levels are measured in terms of the "A-weighted decibel." The "equivalent noise level" or L_{eq} is the average noise level on an energy basis for any specified time period. The L_{eq} for one hour is the energy average noise level during the hour, specifically, the average noise based on the energy content (acoustic energy) of the sound. It can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level.

Several rating scales have been developed for measurement of community noise. These account for: (1) the parameters of noise that have been shown to contribute to the effects of noise on man; (2) the variety of noises found in the environment; (3) the variations in noise levels that occur as a person moves through the environment; and (4) the variations associated with the time of day.

The predominant rating scale now in use in California for land use compatibility assessment is the Community Noise Equivalent Level (CNEL). The CNEL scale represents a time weighted 24 hour average noise level based on the A-weighted decibel. Time weighted refers to the fact that noise that occurs during certain sensitive time periods is penalized for occurring at these times. The evening time period (7 P.M. to 10 P.M.) penalizes noises by 5 dB, while nighttime (10 P.M.

to 7 A.M.) noises are penalized by 10 dB. These time periods and penalties were selected to reflect people's increased sensitivity to noise during these time periods. Table Q depicts typical outdoor noise levels in terms of CNEL. Federal Agencies typically use the Day-Night Level (L_{dn}) description. In most applications, the differences between L_{dn} and CNEL metrics are negligible.

Noise Criteria

State of California

The State of California has adopted noise standards in areas of regulation not preempted by the federal government. State standards regulate noise levels of motor vehicles and motor boats, establish noise impact boundaries around airports, regulate freeway noise affecting classrooms, and set noise insulation standards. The standards which are applicable to the proposed project are the State Noise Insulation Standards found in the California Code of Regulations. This code requires acoustical insulation in areas subjected to 60 CNEL or greater in order to maintain an annual interior level of 45 CNEL in any habitable room of a dwelling unit. This code applies to new projects which include multiple-family residences, hotels, or motels.

The State Guidelines establish noise acceptability ranges for various land uses. These ranges are in terms of the CNEL scale. For residential land uses, an outdoor noise of 65 CNEL and an interior noise of 45 CNEL are considered acceptable. Outdoor use areas are typically defined by Caltrans and the State of California Noise and Land Use Criteria as rear yards, patios and balconies. Open Space park land has an exterior standard of 65 CNEL for active recreation areas. There is no other specific standard for general open space areas, although these noise levels should be as quiet as possible. Commercial, retail, and industrial land uses are not as sensitive to noise as residential land uses and therefore have higher interior and exterior noise standards.

City of Huntington Beach General Plan

The City of Huntington Beach General Plan Noise Element identifies goals, objectives, and policies formulated to provide basic guiding principles for reduction of noise. The sound level limit for all residential areas is 65 CNEL for outdoor and 45 CNEL for indoor areas.

Land uses that are considered "noise sensitive" receptors which require low noise levels typically include churches, public and private schools, libraries, park and recreation facilities, institutions, residential units, and hospitals. Low noise levels are necessary for these uses in order to preserve their intended goals such as education, health promotion, and general state of well-being.

TABLE Q

TYPICAL OUTDOOR NOISE LEVELS

LAND USE	CNEL
Apartment Next To Freeway	88
3/4 Mile From Touchdown At Major Airport	86
Downtown With Some Construction Activity	78
Urban High Density Apartment	76
Urban Row Housing On Major Avenue	68
Old Urban Residential	59
Wooded Residential	51
Agricultural Cropland	44
Rural Residential	39
Wilderness Ambient	35

Source: EDAW, Inc.
CNEL = Community Noise Equivalent Level

Existing Traffic Noise Levels

Presently, the 49.5-acre project site is vacant. The area surrounding the project is primarily residential uses. Residential uses are considered noise sensitive receptors. The project site is designated for single-family residential uses and is located in an urbanized location with ambient background noise levels.

Some land uses are considered more sensitive to intrusive noise levels than others, due to the amount of noise exposure (in terms of both exposure time and insulation from noise) and the types of activities typically involved. Residences, motels and hotels, schools, libraries, and recreation areas are generally more sensitive to noise than are sports facilities, and commercial and industrial land uses.

The principal source of noise on the project site and in the vicinity of the project site is vehicular traffic. Based upon information contained in the Traffic Study, the major source of traffic related noise occurs from Graham Street, a two lane commuter road which runs adjacent to the site.

The existing noise levels used in the analysis for the proposed project have been estimated in terms of the CNEL index by modeling the roadways for current traffic speed characteristics. The roadway noise levels were computed using the Highway Noise Model published in the Federal Highway Administration ("FHWA Highway Traffic Noise Prediction Model," FHWA-RD-77-108, December 1978.).

The FHWA Model uses traffic volume (average number of vehicle trips per day), vehicle mix (percentage of cars, trucks, and heavy trucks), vehicle speed, and roadway geometry to compute the CNEL. Equivalent noise levels are computed for each of the time periods. Weighing these noise levels and adding them, results in the CNEL for the existing traffic estimated. For roadway analysis, worst-case assumptions have been made and are incorporated in the modeling effort.

Table R details the current noise levels for the modeled road segment. Table R provides the distances to the existing 60, 65, and 70 CNEL contours for Graham Street between Slater Avenue and Warner Avenue. These values represent the distance from the centerline of the road to the contour value shown. In addition, Table R provides the CNEL at 50 feet from the nearest travel lane centerline. Varying topography, different distances of noise sensitive receptors from the road segments, different design and location of existing structures as well as variable traffic volumes, speeds, and mixes make it difficult to precisely forecast the existing traffic noise levels at specific locations. The projections depicted in Table R do not take into account the mitigating effects of any intervening structures, such as walls, that may effect ambient noise levels.

The existing sensitive receptors located closest to Graham Street are the single-family homes (approximately 6 homes) along Kenilworth, Glenstone, and Pendleton Streets located approximately 51, 50, and 61 feet from the centerline of the roadway. The existing CNEL contour is approximately 68 feet from the center line of Graham Street.

Therefore, the roadway segment currently exposes sensitive receptors to noise levels slightly over the 65 CNEL exposure limit. As stated previously, the noise projections do not take into account the mitigating effects of any intervening structures, such as walls, that may effect ambient noise levels, thus this is considered a worst case scenario.

TABLE R

EXISTING CONDITION DISTANCES TO CNEL NOISE CONTOURS

Roadway	Distance To Contour[1]			CNEL At 50 Feet[2]
	70 CNEL	65 CNEL	60 CNEL	
Graham Street (between Slater Avenue and Warner Avenue)	0	68	211	65.1 dB

Source: EDAW, Inc.

[1] Distance to CNEL contour from centerline of roadway in feet.
[2] CNEL at 50 feet from near travel lane centerline.
CNEL = Community Noise Equivalent Level

IMPACTS

Appendix G of the CEQA Guidelines serves as a guideline/general example of impacts that are normally considered to have a significant effect on the environment. A project would typically have a significant noise impact if it will:

(p) Substantially increase ambient noise levels adjacent to the project.

The City of Huntington Beach General Plan Noise Element specifies the sound level limit for all residential areas as 65 CNEL for outdoor and 45 CNEL for indoor areas. Any increase in noise above those limits will have a significant noise impact.

In addition to the above criteria, noise impacts must be assessed in terms of perceived change in existing sound levels. Typically for short-term noise sources, an increase of at least 3 dB is usually required before most people perceive a change in noise levels, and an increase of 5 dB is required before the change will be clearly noticeable. Table C is based upon recommendations made by the Federal Interagency Committee on Noise (FICON) to provide guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. Their recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been assumed for this analysis that they are applicable to all sources of noise that are described in terms of cumulative noise exposure metrics such as L_{dn} or CNEL. These metrics are generally applied to transportation noise sources, and define noise exposure in terms of average noise exposure during a 24-hour period with penalties added to noise that occurs during the nighttime or evening. L_{dn} or CNEL are often defined in terms of an average annual day, and are therefore quite different than the short-term noise level descriptors described above.

This report will utilize Table S in determining which noise impacts have the potential to be noticeable and considered to be a significant noise impact.

Currently, the modeled roadway segment does slightly exceed the criteria for acceptable noise levels under a "worst case" scenario assuming no sound reductions from walls. To determine project related impacts to this roadway segment, the criteria of "perceived change" along with the violation of noise standards will be used. For the perceived change condition, if the street segment experiences a noise increase over 1.5 dB beyond the estimated future noise conditions due to project related traffic, this will be considered a significant impact.

For the purposes of this report, significant impacts exist where the community noise standards are violated as a result of the implementation of the proposed project. The impacts related to the above stated criteria are discussed below.

Potential noise impacts are divided into two groups: short-term and long-term. The short-term temporary impacts are usually associated with noise generated by construction activities. Long-term impacts are generated by mobile sources and stationary sources associated with occupancy and operation of the development.

Short-term Construction Noise

The proposed project has the potential to result in short-term construction noise impacts to surrounding land uses due to the grading and construction activities. Construction noise represents a short-term impact on ambient noise levels. Although most of the types of exterior construction activities associated with the proposed project will not generate continually high noise levels, occasional single-event disturbances from grading and construction activities are possible. Table T depicts typical construction equipment noise. Construction equipment noise is controlled by the Environmental Protection Agency's Noise Control Program (Part 204 of Title 40, Code of Federal Regulations).

TABLE S

SIGNIFICANCE OF CHANGES IN CUMULATIVE NOISE EXPOSURE

Ambient Noise Level Without Project (L_{dn} or CNEL)	Significant Impact
<60 dB	+5.0 dB or more
60 - 65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

Source: Federal Interagency Committee on Noise (FICON)

TABLE T

CONSTRUCTION EQUIPMENT NOISE

Type	Maximum Level, dB at 50 Feet
Bulldozers	87
Heavy Trucks	88
Backhoe	85
Pneumatic Tools	85

Source: Environmental Noise Pollution, 1977

During the construction phase of the project, noise from construction activities will add to the noise environment in the immediate area. Activities involved in construction would generate maximum noise levels, as indicated in Table D, ranging from 85 to 88dB at a distance of 50 feet. Construction activities will be temporary in nature and are expected to occur during normal daytime working hours. Construction noise impacts could result in annoyance or sleep disruption for nearby residences if nighttime operations occurred, or if unusually noisy equipment was used.

Noise would also be generated during the construction phase by increased traffic associated with transport of heavy materials and equipment. Noise associated with the hauling of fill import will also occur during construction. The noise would be short in duration and would occur primarily during daytime hours.

The proposed project has the potential to result in significant short-term noise impacts on nearby sensitive noise receptors. Implementation of Mitigation Measures 1 and 2 will reduce short-term construction noise impacts to noise sensitive land uses a level less than significant.

As discussed in Section 3.0 of this document, the remedial grading component of the project will require dewatering. The dewatering activities are estimated to occur over a four (4) to six (6) month period. Approximately 30 to 40 submersible pumps would be utilized during this effort. The exact location of the pumps placement is current unknown; however, they will most likely be placed on-site adjacent to the flood control channel because groundwater levels are typically higher at this location. According to Foothill Engineering and Dewatering, Inc., the primary noise levels associated with dewatering occur from the "power source" (i.e., generators) and not the pump itself. The submersible pumps will be placed at the bottom of wells (20 to 40 feet below the surface) and therefore would not produce noise levels which would exceed 65 (dBA).

Based upon information provided by Utility Consultants of Orange County, temporary electrical power necessary to operate the dewatering pumps could be brought underground to the project site from the east side of Graham Street where it currently exists. If the dewatering activities can be accomplished using temporary electrical power at the site, potential noise impacts associated with the activities would be minimal and would not exceed City standards. If this temporary electrical power cannot be obtained, gas-powered portable generators would be required to power the submersible pumps. Specifications on generators with soundproof housing indicate the resulting noise levels are 65.5 (dBA) at 23 feet (refer to Appendix C for actual specifications). Typical "non-soundproof" generators can produce noise levels between 80 and 90 (dBA). Additionally, the portable generator(s) with soundproof housing could be placed within temporary soundproof structures to further reduce the noise levels. Mitigation Measure 1 has been proposed to ensure the construction dewatering activities do not exceed City noise standards. Implementation of this mitigation will reduce potential impacts to a less than significant level.

Long-Term Impacts

Roadway Noise

A potential acoustic impact of buildout of the project site is noise from project generated traffic along nearby roadways. Noise modeling for long-term impacts is based on existing plus project traffic conditions as discussed in Darnell & Associates traffic study. In order to determine project impacts, the existing plus project traffic conditions as well as year 2020 cumulative traffic conditions were modeled for estimated noise levels. Based upon the future traffic volumes contained in the traffic study and distances of the surrounding roadways to sensitive receptors (i.e., existing and future homes), Graham Street between Slater Avenue and Warner Avenue was selected for modeling analysis. If two different volume numbers were provided for the Graham Street segment in the traffic analysis, the higher volume was utilized to provide a worst-case analysis.

EXISTING PLUS PROJECT NOISE LEVELS

Based on the CNEL contours in Table E it is estimated that roadway segment modeled for noise will continue to expose off-site sensitive receptors to noise levels which exceed the 65 CNEL exposure limit assuming no sound wall reductions. The 65 CNEL is projected at 81 feet from the roadway centerline. As stated above, the closest off-site sensitive receptors are the single family residences (approximately 6 homes) along Kenilworth, Glenstone, and Pendleton Streets located approximately 51, 50, and 61 feet from the near travel lane of the roadway. The closest future on-site sensitive receptors are lots #66, #67 and #68 (refer to Exhibit 6a) located approximately 65, 90, and 113 feet from the centerline of the roadway. Thus, Lot #66 may currently experience exterior noise levels in excess of 65 CNEL assuming no sound reduction from walls. As stated previously, the noise projections do not take into account the mitigating effects of any intervening structures, such as walls, that may effect ambient noise levels. The increase in CNEL due to project implementation is 0.8dB. This increase is substantially less than the 1.5dB standard for a perceived change for this worst case scenario. Additionally, noise industry standards data indicates that sound walls can reduce noise levels from 5 dBA to a maximum of approximately 20 dBA. The project proposes to ~~replace the current six-foot wall located north of the site with~~ ***construct*** a six-foot masonry privacy wall that would run along the rear property line of lot #103 to lot #123 and the side property lines of lots #125 and #126 of Tract 5792. Privacy walls will also be included along Graham Street (rear property line of proposed lots #66, #67, and #68). Mitigation Measure 3 is proposed to ensure the new walls are constructed to achieve maximum noise attenuation. No impact is anticipated.

TABLE U

EXISTING PLUS PROJECT DISTANCES TO CNEL NOISE CONTOURS

Roadway	Distance To Contour[1]			CNEL At 50 Feet[2]
	70 CNEL	65 CNEL	60 CNEL	
Graham Street (between Slater Avenue and Warner Avenue)	0	81	254	65.9dB

Source: EDAW, Inc.

[1] Distance to CNEL contour from centerline of roadway in feet.
[2] CNEL at 50 feet from near travel lane centerline.
CNEL = Community Noise Equivalent Level

Recreational Noise

Another potential acoustic impact of the project is noise associated with recreational activities generated at the proposed park site. As described in Section 3.0 of this document, the ±8 acre park site located in the northwest corner of the project site would include approximately ~~3.4~~ ***3.8*** acres of flat useable space. The City Community Services Department proposes the construction of a large turf area with a softball backstop, a soccer/~~football~~***baseball*** overlay~~, and~~ a tot lot***, and basketball court*** on the ~~3.4~~***3.8***-acre park area (refer to Section 3.0). The park does not include field night lighting. The turf area would serve neighborhood kids who practice softball, soccer, or ~~football~~ ***baseball*** recreationally and is not designed for competitive league games.

Noise levels from a typical tot lot (for 12 children) range between 43 and 65 (dBA) at 50 feet from the noise source (i.e., play area). The noise levels associated with informal practice games are not anticipated to exceed the standards of the City's noise ordinance based on noise measurement data for organized league games. Existing off-site homes located closest to the proposed park are on Greenleaf Lane and are approximately 300 to 350 feet from the proposed park activities where noise would be generated (i.e., backstop area and tot lot). The project proposes to ~~replace the current six-foot wall with~~ ***construct*** a six-foot masonry privacy wall that would run along the rear property line of lot #103 to lot #123 and the side property lines of lots #125 and #126 of Tract 5792, located north of the site. The proposed on-site homes closest to the park are 100 feet from the proposed park activities. Based on the distance of on-site and off-site homes to the park and the barriers (i.e., proposed new six (6) foot wall), no significant impacts are anticipated. Mitigation Measure 3 is proposed to ensure the new walls are constructed to achieve maximum noise attenuation. No impact is anticipated.

CUMULATIVE IMPACTS

The proposed project in conjunction with other past, present, and reasonably foreseeable future projects will not result in a short-term construction noise impact. The projects incremental impact is mitigated to a less than significant level. The long-term cumulative noise levels are discussed below.

YEAR 2020 NOISE LEVELS

Table F depicts the year 2020 noise levels. This future scenario includes traffic associated with buildout of the project along with all other proposed and approved development in the area. It is estimated that vehicular traffic along Graham Street will continue to expose sensitive receptors to noise levels above 65 CNEL assuming no sound wall reductions. The 65 CNEL is projected at 105 feet from the roadway centerline and noise levels of 67 dBA are projected 50 feet for the near travel lane. As stated above, the closest off-site sensitive receptors are the single family residences along Kenilworth, Glenstone, and Pendleton Streets located approximately 51, 50, and 61 feet from the near travel lane of the roadway. The closest future on-site sensitive receptors are lots #66, #67 and #68 (refer to Exhibit 6a) located approximately 65, 90, and 113 feet from the centerline of the roadway. Thus, lots #66 and #67 may experience exterior noise levels in excess of 65 CNEL assuming no sound reduction from walls.

TABLE V

YEAR 2020 DISTANCES TO CNEL NOISE CONTOURS

Roadway	Distance To Contour[1]			CNEL At 50 Feet[2]
	70 CNEL	65 CNEL	60 CNEL	
Graham Street (between Slater Avenue and Warner Avenue)	0	105	330	67.1dB

Source: EDAW, Inc.

[1] Distance to CNEL contour from centerline of roadway in feet.
[2] CNEL at 50 feet from near travel lane centerline.
CNEL = Community Noise Equivalent Level

The proposed project in conjunction with other past, present, and reasonably foreseeable future projects will not result in a significant incremental increase (0.8 dBA) in traffic noise levels in the year 2020. Noise levels in excess of 65 CNEL are not anticipated considering the sound

reduction effects of the proposed wall along the northern property line and along Graham Street. Mitigation Measure 3 is proposed to ensure the new walls are constructed to achieve maximum noise attenuation.

STANDARD CITY POLICIES AND REQUIREMENTS

A. Construction shall be limited to Monday - Saturday 7:00 AM to 8:00 PM. Construction shall be prohibited Sundays and Federal holidays.

MITIGATION MEASURES

1. Prior to issuance of grading permits, the applicant shall submit and have approved a noise mitigation plan to the Department of ~~Community Development~~ ***Planning*** that will reduce or mitigate short-term noise impacts to nearby noise sensitive. The plan shall comply with the City of Huntington Beach Noise Ordinance and shall include, but not be limited to:

    A. A criteria of acceptable noise levels based on type and length of exposure to construction noise levels;

    B. Physical reduction measures such as temporary noise barriers that provide separation between the source and the receptor; temporary soundproof structures to house portable generators; and

    C. Temporary generators (if utilized) shall be located as far as practical from sensitive noise receptors.

    D. Mitigation measures such as restrictions on the time of construction for activities resulting in high noise levels.

2. Prior to issuance of grading permits, the applicant shall produce evidence acceptable to the City Engineer that:

    A. All grading and construction vehicles and equipment, fixed or mobile, shall be equipped and maintained with effective muffler systems that use state of the art noise attenuation.

    B. Stockpiling and/or vehicle staging areas shall be located as far as practicable from sensitive noise receptors.

    C. All operations shall comply with the City of Huntington Beach Noise Ordinance.

3. Prior to issuance of grading permits, the applicant shall produce evidence (specifications) acceptable to the City Engineer that the new walls along the projects northern property (along the rear property line of lot #103 to lot #123 ***on Kenilworth Drive*** and the side property lines of lots #125 and #126 ***on Greenleaf Lane*** of Tract 5792) and Graham Street (along the project's boundary) will be constructed to achieve maximum sound attenuation.

LEVEL OF SIGNIFICANCE

The proposed project has the potential to result in significant short-term noise impacts during exterior and interior construction activities. Implementation of Standard City Policies and Requirements and Mitigation Measures 1 and 2 will reduce short-term construction noise impacts to a level less than significant.

The proposed project will increase the existing plus project traffic noise levels along Graham Street by up to 0.8 dB. The 0.8 dB increase in noise levels is not considered a significant impact.

Based on the distance of on-site and off-site homes to the park and the barriers (i.e., proposed new six (6) foot wall), the proposed project is not anticipated to result in significant noise impacts from recreational activities at the proposed park site. Mitigation Measure 3 is proposed to ensure the new walls are constructed to achieve maximum noise reduction.

The proposed project in conjunction with other past, present, and reasonably foreseeable future projects will not result in a short-term construction noise impact.

The proposed project in conjunction with other past, present, and reasonably foreseeable future projects will not result in a significant incremental increase (0.8 dBA) in traffic noise levels in the year 2020. Noise levels in excess of 65 CNEL are not anticipated considering the sound reduction effects of the proposed wall along the northern property line and along Graham Street. Mitigation Measure 3 is proposed to ensure the new walls are constructed to achieve maximum noise reduction.